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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/659,956	09/11/2003	Takuro Sekiya	2271/71049	5866

7590 05/22/2006

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EXAMINER	
SHAH, MANISH S	

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 05/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/659,956	SEKIYA, TAKURO	
	Examiner	Art Unit	
	Manish S. Shah	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-54* is/are pending in the application.

4a) Of the above claim(s) *11-30,35-42 and 47-54* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,31-34 and 43-46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/14/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-10 & 43-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiya (# US 6338545).

Sekiya discloses a liquid jet head comprising:

• A nozzle element having nozzles from which a recording liquid ejected to a recording medium, wherein the recording liquid contains fine particles of a pigment, wherein the fine particles of the pigment contained in the recording liquid are no less than 1% by weight (see Examples), wherein each of the nozzles has an area that is less than 500 μm^2 (see Abstract; column: 12, line: 10-15), wherein each of the fine particles of the pigment has a diameter satisfying a relation $0.0005 \leq Dp/Do \leq 0.02$ (see Table: 1-4), wherein "Dp" represents the diameter the fine particles of the pigment and "Do" represents a size of each of the nozzles.

• The fine particles of the pigment are dispersed in the recording liquid by including a dispersant in the recording liquid or surface processing the fine particles of the pigment (see Examples).

• The fine particles of the pigment contained in the recording liquid range from 2% to 10% by weight, wherein a solid content of the recording liquid including the fine particles of the pigment contained the recording liquid is no more than 15% by weight (see Table: 5).

• The liquid jet head further including one or more other nozzle elements respectively having nozzles from which one or more other recording liquids are ejected to the recording medium (figure: 1-12).

• The one or more other nozzle elements are integrally formed to thereby form a head unit (figure: 5-9).

• The head unit has a recording head portion and a recording liquid container portion, wherein the recording head portion and the recording liquid container portion are integrally formed or detachably attached to the recording head portion, wherein the recording liquid container portion is detachable according to type of the one or more other recording liquids (figure: 5-12).

• The liquid jet head employs a thermal liquid jet method, which uses heat for ejecting recording liquid therefrom (column: 6, line: 20-30).

Sekiya differs from the claim of the present invention is that a contact angle the recording liquid stops changing when 100 ms or less elapses after the recording liquid contacts the recording medium, and the fine particles of the pigment are smaller than fibers of the recording medium, wherein the fine particles of the pigment are smaller than spaces between the fibers of the recording medium.

It would have been obvious to one having ordinary skill in the art at the time of invention was made to incorporate a contact angle the recording liquid stops changing when 100 ms or less elapses after the recording liquid contacts the recording medium, and the fine particles of the pigment are smaller than fibers of the recording medium, wherein the fine particles of the pigment are smaller than spaces between the fibers of the recording medium, since it has been held that it is not inventive to discovering and optimum value or workable ranges by routine experimentation. *In re Aller*, 105 USPQ 233 (CCPA1955).

2. Claims 31-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiya (# US 6338545).

Sekiya discloses a liquid jet recording apparatus including a liquid jet head including:

• A nozzle element having nozzles from which a recording liquid ejected to a recording medium; a carriage mounting the liquid jet head; a guiding rod guiding the carriage; a conveying roller conveying the recording medium; a holding roller holding the recording medium (figure: 6), wherein the recording liquid contains fine particles of a pigment, wherein the fine particles of the pigment contained in the recording liquid are no less than 1% by weight (see Examples), wherein each of the nozzles has an area that is less than 500 μm^2 (see Abstract; column: 12, line: 10-15), wherein each of the fine particles of the pigment has a diameter satisfying a relation $0.0005 \leq Dp/Do \leq 0.02$

(see Table: 1-4), wherein "Dp" represents the diameter the fine particles of the pigment and "Do" represents a size of each of the nozzles.

- The fine particles of the pigment are dispersed in the recording liquid by including a dispersant in the recording liquid or surface processing the fine particles of the pigment (see Examples).

- The fine particles of the pigment contained in the recording liquid range from 2% to 10% by weight, wherein a solid content of the recording liquid including the fine particles of the pigment contained the recording liquid is no more than 15% by weight (see Table: 5).

Sekiya differs from the claim of the present invention is that a contact angle the recording liquid stops changing when 100 ms or less elapses after the recording liquid contacts the recording medium, and the fine particles of the pigment are smaller than fibers of the recording medium, wherein the fine particles of the pigment are smaller than spaces between the fibers of the recording medium.

It would have been obvious to one having ordinary skill in the art at the time of invention was made to incorporate a contact angle the recording liquid stops changing when 100 ms or less elapses after the recording liquid contacts the recording medium, and the fine particles of the pigment are smaller than fibers of the recording medium, wherein the fine particles of the pigment are smaller than spaces between the fibers of the recording medium, since it has been held that it is not inventive to discovering and optimum value or workable ranges by routine experimentation. *In re Aller*, 105 USPQ 233 (CCPA1955).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Manish S. Shah whose telephone number is (571) 272-2152. The examiner can normally be reached on 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Manish S. Shah
Primary Examiner
Art Unit 2853

MSS
5/17/06